

WHAT IS CLAIMED IS:

1. A method for integrated retrieval and annotation of stored images involving a computer application in which text is input by a user, said method comprising the steps of:

- a) providing metadata associated with the stored images;
- b) running a user application in which text is entered by a user;
- c) continuously monitoring text typed by the user into the application to isolate the context expressed by the text;
- d) matching the context with the metadata associated with the stored images, thereby providing one or more matched images;
- e) retrieving and displaying the matched images; and
- f) utilizing the context to provide suggested annotations to the user for the matched images, together with the capability of selecting certain of the suggested annotations for subsequent association with the matched images.

2. The method as claimed in claim 1 further comprising the step of providing the user with the capability of inserting selected ones of the matched images into the text of the application.

3. The method as claimed in claim 1 wherein the stored images are stored in a data base and step f) further includes automatically updating the metadata for the matched image stored in the data base with the suggested annotations.

4. The method as claimed in claim 1 wherein the metadata includes keywords related to the images and the context likewise comprises keywords.

5. The method as claimed in claim 1 wherein the metadata includes content data related to the images and the context likewise comprises content data.

6. The method as claimed in claim 1 wherein the metadata includes temporal data related to the images and the context likewise comprises temporal data.

7. The method as claimed in claim 1 wherein the user is entering text at a particular cursor location and the context is determined based upon the proximity of typed words to the cursor location.

8. The method as claimed in claim 1 further comprising the step of providing the user with the capability of adding other annotations to the matched images.

9. The method as claimed in claim 1 wherein step d) further comprises ranking the matched images according to context, thereby providing ranked images that may be displayed in step e) according to their rank.

10. The method as claimed in claim 9 wherein the context comprises keywords and the ranking is based on the number of matched keywords for each matched image.

11. The method as claimed in claim 9 wherein the context and metadata include temporal data and the ranking is based on the temporal distance between the context and the metadata associated with each matched image.

12. The method as claimed in claim 9 wherein the context comprises keywords and temporal data and the ranking is based on the intersection of their occurrence for each matched image.

13. A method for utilizing images that are stored in a data base with an e-mail application in which text is input by a user into a message, said method comprising the steps of:

a) providing metadata associated with the stored images;

- b) running an e-mail application in which text is entered by a user into a message window;
- c) continuously monitoring text typed by the user into the message window to isolate keywords in the text;
- d) matching and ranking the keywords with the metadata associated with the stored images, thereby providing one or more matched images that are ranked according to the keywords;
- e) retrieving and displaying the matched images alongside the message window in order of their rank; and
- f) providing the user with the capability of moving selected ones of the matched images into the message window.

14. The method as claimed in claim 13 further comprising the step of utilizing the context to automatically provide new keyword annotations for the matched images.

15. The method as claimed in claim 13 further comprising the step of utilizing the context to provide new keyword annotations for the matched images, together with the capability of manually selecting certain of the annotations for subsequent association with the matched images in the data base.

16. The method as claimed in claim 14 wherein the step of utilizing the context further includes automatically updating the metadata for the matched image with the annotations.

17. The method as claimed in claim 15 wherein the step of utilizing the context further includes automatically updating the metadata for the matched image with the annotations.

18. The method as claimed in claim 13 wherein the ranking is based on the number of matched keywords for each matched image.

19. The method as claimed in claim 13 wherein the keywords and metadata include temporal references and the ranking is based on the temporal distance between the keyword and the metadata associated with each matched image.

20. The method as claimed in claim 13 further comprising the step of utilizing the context to either automatically or manually select new keyword annotations for the matched images, wherein the ranking is based on a higher confidence level for the manually selected keyword annotations.

21. The method as claimed in claim 13 wherein the keywords and metadata include spatial or geographic references and the ranking is based on the spatial or geographic correspondence between the keyword and the metadata associated with each matched image.

22. An autonomous agent for use in automatically interfacing a text-based application with a picture archive containing representations of images and metadata associated with the images, said agent comprising:

a language analyzer for continuously monitoring text entered by the user into the application and extracting keywords appropriate to the context surrounding the entered text;

a retrieval agent for retrieving images from the archive on the basis of one or more matches between the extracted keywords and the metadata;

an annotation agent for providing suggested annotations to the user for the matched images based on the extracted keywords, together with the capability of selecting certain of the suggested annotations for subsequent association with the matched images; and

a picture database viewer for displaying the retrieved images to the user and for enabling the images to be incorporated into the application, as desired by the user.

23. The agent as claimed in claim 22 wherein the retrieval agent ranks the retrieved images based on attributes of the keywords, and the picture database viewer displays the retrieved images in order of their ranking.

24. The agent as claimed in claim 22 wherein the application is an e-mail application.

25. The agent as claimed in claim 22 wherein the picture database viewer incorporates a retrieved image into the application by a drag and drop operation.

26. The agent as claimed in claim 22 wherein the picture database viewer incorporates a retrieved image into the application by a one click selection of the image.

27. The agent as claimed in claim 22 further comprising a manual annotation agent for adding annotations to the retrieved image and for storing the added annotations to the metadata stored in the archive.

28. The agent as claimed in claim 22 wherein the retrieval agent retrieves images from the archive on the basis of matching between the extracted keywords and temporal metadata identifying the time and date when the images were captured.

29. The agent as claimed in claim 22 further comprising an automatic import agent for automatically entering images into the archive from one or more specified image sources.

30. The agent as claimed in claim 29 wherein the retrieval agent automatically retrieves the entered images and the picture database viewer automatically displays the entered images.